catch and eat badgers'' seems to need some sort of qualification. The reviewer and at least one of his associates have on several occasions seen coyotes and badgers cross each other's tracks, without the slightest show of fear or aggressiveness on either side; and persons familiar with the strength, ferocity and resisting powers of the badger can hardly imagine a coyote rash enough to meddle with one. Of course, a hungry coyote might tackle a young or enfeebled badger, but in the case of adults in ordinary health and spirits it is hard to believe that a coyote would ever invite such a terrible contest.

'Trail and Camp Fire' is a storehouse of information for the sportsman-naturalist and a worthy companion of 'American Big Game Hunting' and 'Hunting in Many Lands,' its predecessors in the Boone and Crockett series.

C. H. M.

SOCIETIES AND ACADEMIES.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 480th meeting was held at the Cosmos Club on Saturday evening, February 19th, at 8 p. m. The first paper was by Mr. H. A. Hazen on 'The Origin and Value of Weather Folk-lore.' In substance Mr. Hazen said: "A weather saying or sign to be of value should be based on a sufficient number of coincidences between the sign and the supposed resulting weather to make it a law." It was shown that four-fifths at least of the current weather signs and proverbs could not be regarded laws. "The earliest of these signs, some think, is in Job [Canst thou bind the sweet influences of the Pleiades], but this refers only to the fact that, before the calendar month and year were established, the rising and setting of the constellations were taken by the ancients to mark the seasons and the times of sowing and harvesting. There is no thought that the Pleiades have any direct influence upon terrestrial conditions. Hesiod (850 B. C.) gives the cuckoo (rain crow) sign of rain, and it is a little remarkable that this early sign has come down through the ages as the best animal sign of rain."

The author spoke of pseudo weather lore; signs from the moon (universal in civilized nations); from the planets, which may be brought down to the planetarians of the present day; from eclipses, clouds, halos; from animals, birds, etc.

The second paper was by Mr. W. H. Dall, who spoke on the condition of Tertiary Paleontology in the United States. The speaker restricted himself to a consideration of the fossil invertebrates of marine origin. He briefly sketched the history of this branch of American science, from its beginnings with Say, Morton, Lea and Conrad, to the present time, showing how, after the energy of the earlier Philadelphia school had spent itself, a period of comparative inaction set in, which had now given way to renewed activity, which is gradually placing this branch of the science on a modern basis. This awakened interest is largely due to the initiative of the Wagner Free Institute of Science in Philadelphia and the extension of the work of the United States Geological Survey to the coastal plain and phosphate regions of the Southern States.

E. D. PRESTON,
Secretary.

ZOOLOGICAL CLUB, UNIVERSITY OF CHICAGO, MEETINGS OF DECEMBER AND JANUARY.

Maturation and Fertilization of the Egg of Arenicola Marina. In the earliest stage in which centrosomes have been seen, there are two, at some distance from each other in the cytoplasm, each surrounded by a small, deeply staining area, and few, very delicate radiations. The rays elongate, a large spindle is formed, and the chromosomes, now lying free in the cytoplasm, arrange themselves upon it. In approaching its definitive position at the pheriphery of the egg, this first polar spindle contracts to about one-half its original length. The centrosomes at each pole divide as the separation of the chromosomes begins. The two centrosomes at the inner pole form the poles of the second polar spindle. They move apart, showing a central spindle, new asters appear, and the spindle assumes the position occupied by the first polar spindle.

After the formation of the second polar body the female pronucleus is formed, and the 'female' centrosome and aster disappear. The sperm apparently enters at any point, but cannot be

distinguished from yolk granules at first, as, for some time, no 'male' aster appears. Later, however, the sperm-head enlarges and an aster and centrosome appear, the centrosome divides and two asters are formed connected by a spindle. All of these disappear, however, at the same time as the female aster and centrosome.

When the two pronuclei come into contact no centrosomes or asters are visible in the egg. The two pronuclei as a whole form the center of a large radiation extending nearly to the periphery of the egg. A little later a very minute centrosome and aster appear on each side of the pronuclei in the copulation plane. Both centrosomes and asters increase in size, one being larger than the other (the first cleavage is unequal), fibers extend past the pronuclei from one centrosome to the other and the first cleavage spindle is formed. The pronuclei elongate and lose their membranes without preceding fusion. As the astral rays elongate, the radiation which surrounded the pronuclei disappears and the cytoplasm rearranges itself as the rays of an aster centering about a centrosome.

C. M. Child.

Notes on the Peripheral Nervous System of Molgula Manhattensis. The intra-vitam method of methylene blue staining was used. Sensory cells occupying a lateral position in the endostyle were found. These cells are characterized by a distal knob or spike and one or more proximally placed enlargements, one of which contains the nucleus. Some cells showed protoplasmic (?) branchings. No supporting cells were seen. Nerve fibrils, after leaving the epithelium, turn sharply at right angles to run longitudinally as separate fibrils or in loose bundles. They probably reach the (brain) ganglion by the circumbuccal nerves.

The endings in the branchial basket are knob- or disk-like. Nerve fibrils may end on cells in the walls of the branchial bars or freely. Fibrils may lie in the supporting tissue or be applied to the base of the epithelium, and, singly or in bundles, anastomose to form a true plexus. Ganglion cells are found. Fibrils end on the basal part of mucus or ciliated cells in club or disk-shaped endings. Other fibers touch the base of a cell with a knob-like varicosity and continue their course, touching neighboring cells in like manner before finally ending.

A sub-epithelial plexus was found in other parts of the body. Nerve endings were found in the muscles and ciliated funnel. The sensory nature of the tentacles and papillæ of the peribranchial sac was not demonstrated.

G. W. Hunter, Jr.

During the two months the following reviews and papers were also given: 'Recent Literature on the Embryology of Insects' (Uzel and Heymons), Dr. W. M. Wheeler; 'The Lithodidæ, a Family of Asymmetrical Crabs,' S. J. Holmes; 'Theories of Animal Phosphorescence,' Dr. Watasé; 'Some of the Functions and Features of a Biological Station,' Dr. Whitman; 'Recent Literature on Regeneration' (Joest), W. H. Packard; 'A Review of Some Recent Work on Spermatogenesis' (Bardeleben), M. F. Guyer; 'Experimental Work on the Cilnophore Egg' (Fischel), Dr. Child; 'The Pronephros in Teleosts' (Felix), Miss E. R. Gregory.

TORREY BOTANICAL CLUB.

At the annual meeting, January 10, 1898, cash balances to the favor of the Club were reported by the Treasurer and the Editor.

The Recording Secretary, Professor Burgess, reported an average attendance of 35 at the 15 meetings held during the year, one death, a present active membership of 213, corresponding membership of 153, honorary membership of 4, total 370. Thirty scientific papers have been presented.

The Editor, Dr. Britton, reported the regular monthly publication of the *Bulletin*, including 592 pages, 33 plates and 1 portrait; and the publication of Vol. VI., No. 2, of the *Memoirs*, containing 80 pages, issued July 30, 1897.

Dr. Small reported for the Field Committee that field meetings were arranged for every Saturday from April 24th to October 30th, and also on election day—29 excursions in all. These were usually half-day excursions, with 4 of the whole day and 4 of two days each. They have extended into the neighboring mainland of New York, into Long Island, Staten Island, New Jersey and Pennsylvania. The average attendance upon the excursions was about 16, and the average number of plants specially recorded 48.

Dr. Rusby, in behalf of the Committee on Program, announced arrangements in progress relative to presentation of several interesting topics before the Club by botanists from other cities.

The fourth order of business was the annual election, resulting in the main in the re-election of the previous officers. The Treasurer, Mr. Ogden, and the Editor, Dr. Britton, on account of pressing present obligations, declined re-election. Their services, rendered for a long series of years, elicited remarks of hearty appreciation.

The officers for 1898 include the following: President, Addison Brown; Vice-Presidents, T. H. Allen, H. H. Rusby; Treasurer, Maturin L. Delafield, Jr.; Recording Secretary, Edward S. Burgess; Corresponding Secretary, John K. Small; Editor, Lucien M. Underwood.

Discussion on the development of the tomato and strawberry followed.

Professor Lloyd spoke of the work of Professor L. H. Bailey upon the origin of the tomato, and exhibited illustrative specimens loaned by Professor Bailey, with others to indicate that *Fragaria Chilensis* is the source of the cultivated strawberry. He also exhibited the original specimen of the strawberry known as Hovey's Seedling.

Dr. Rusby spoke of his experience with the *Fragaria Chilensis* as cultivated in the Bolivian Andes, where, at 10,000 feet altitude, its growth is luxuriant, standing up nearly to the knees. Its fruit is large and juicy, does not keep well, and is without flavor or fragrance. It bears continuously, and he ate from it every month of the year but two. Its identity with the coast form was questioned by Dr. Britton.

Dr. Rusby also exhibited a sample of *Fragaria Mexicana*, by some identified with *F. Chilensis*, and by others with *F. vesca*, but which keeps well and is high flavored.

EDWARD S. BURGESS,
Secretary.

SCIENTIFIC JOURNALS.

The Journal of Geology for January–February, 1898, contains papers on the following subjects: 'An Hypothesis to Account for the Movement in the Crust of the Earth,' J. W. POWELL. After a preliminary introductory statement, the general disturbances of an organic and epeirogenic character are explained by the principle that under sufficient loading, rocks flow; but that the modulus of compression varies for different rocks, and for the same rock as its critical point is approximated. As this point is reached freedom of molecular movement may even become so marked as to cause recrystallization. All these changes tend to produce upheaval and subsidence. 'Estimates and Causes of Crustal Shortening,' C. R. VAN HISE. The author considers the crustal shortening to have probably been much less than is generally assumed and, after a discussion of its various effects and concomitant phenomena in rocks, takes up the following conceivable causes: secular cooling, vulcanism, cementation, change of pressure, change in physical conditions, loss of water and gas. 'Note on the pressure within the earth,' by CHARLES S. SLICHTER. The paper discusses "the magnitude of the pressures within the earth-spheroid, especially as influenced by the changes that have been brought about in the ellipticity of the earth's figure by its changing rotation period." 'The geological *versus* the petrographical classification of igneous rocks,' by WHITMAN CROSS. The paper distinguishes the petrological from the petrographical point of view in rock classification and in a very temperate and excellent manner advocates the latter for systematic classification, the former for theoretical discussion. No actual scheme is, however, advanced. The paper was read at the Montreal meeting of the Geological Society of America and has been previously abstracted in these columns (p. 83). 'On Rock Classification,' by J. P. IDDINGS. With several very suggestive and comprehensive diagrams the author discusses the chemical relations of the igneous rocks. The paper was read at the Montreal meeting of the Geological Society of America and has been previously reviewed in these columns (p. 83).

American Chemical Journal, February.—'On the Action of Acetic Anhydride on Phenylpropiolic Acid': By ARTHUR MICHAEL and J. E. BUCHER. The authors find that in